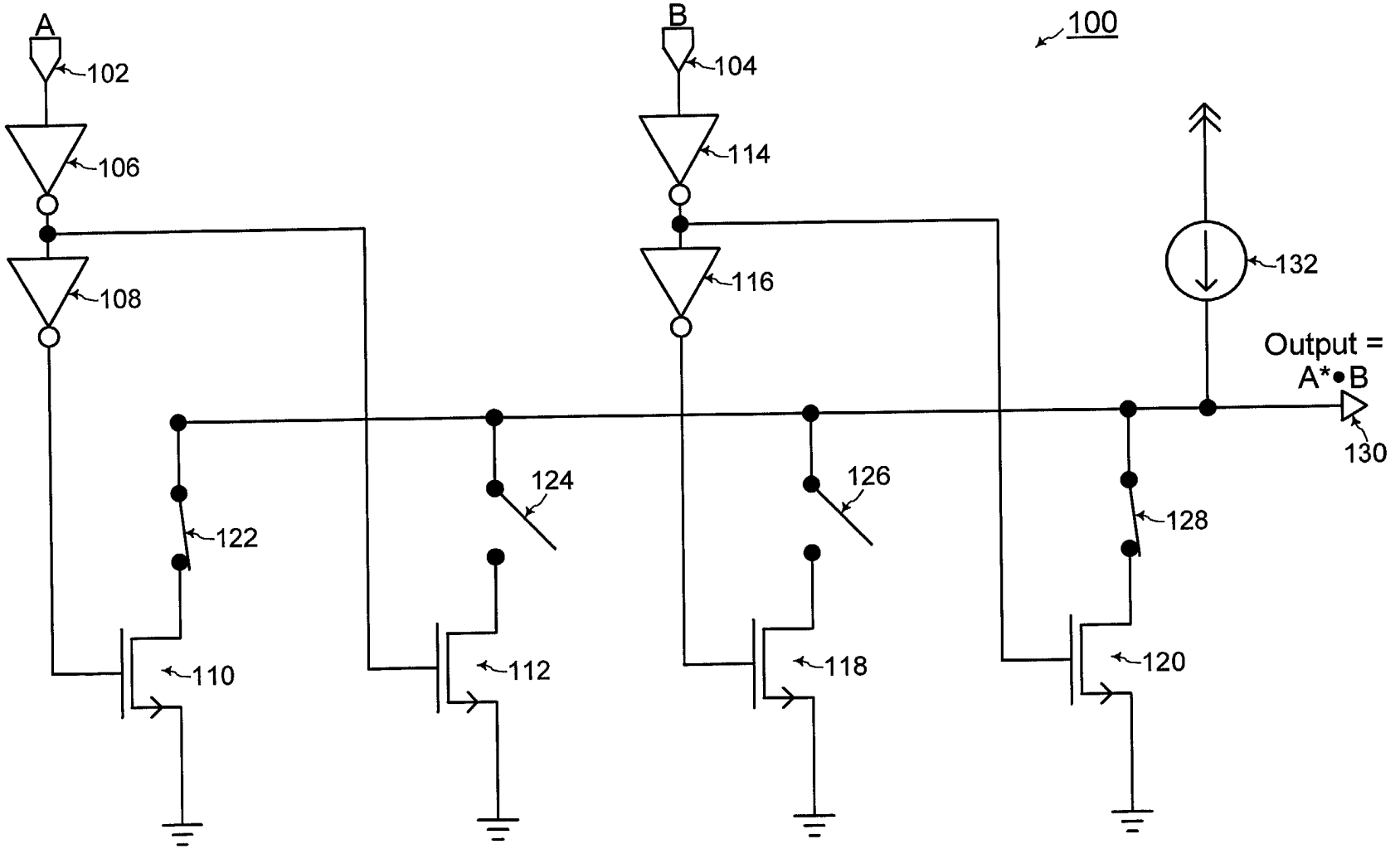

FIG. 1 (Prior Art)

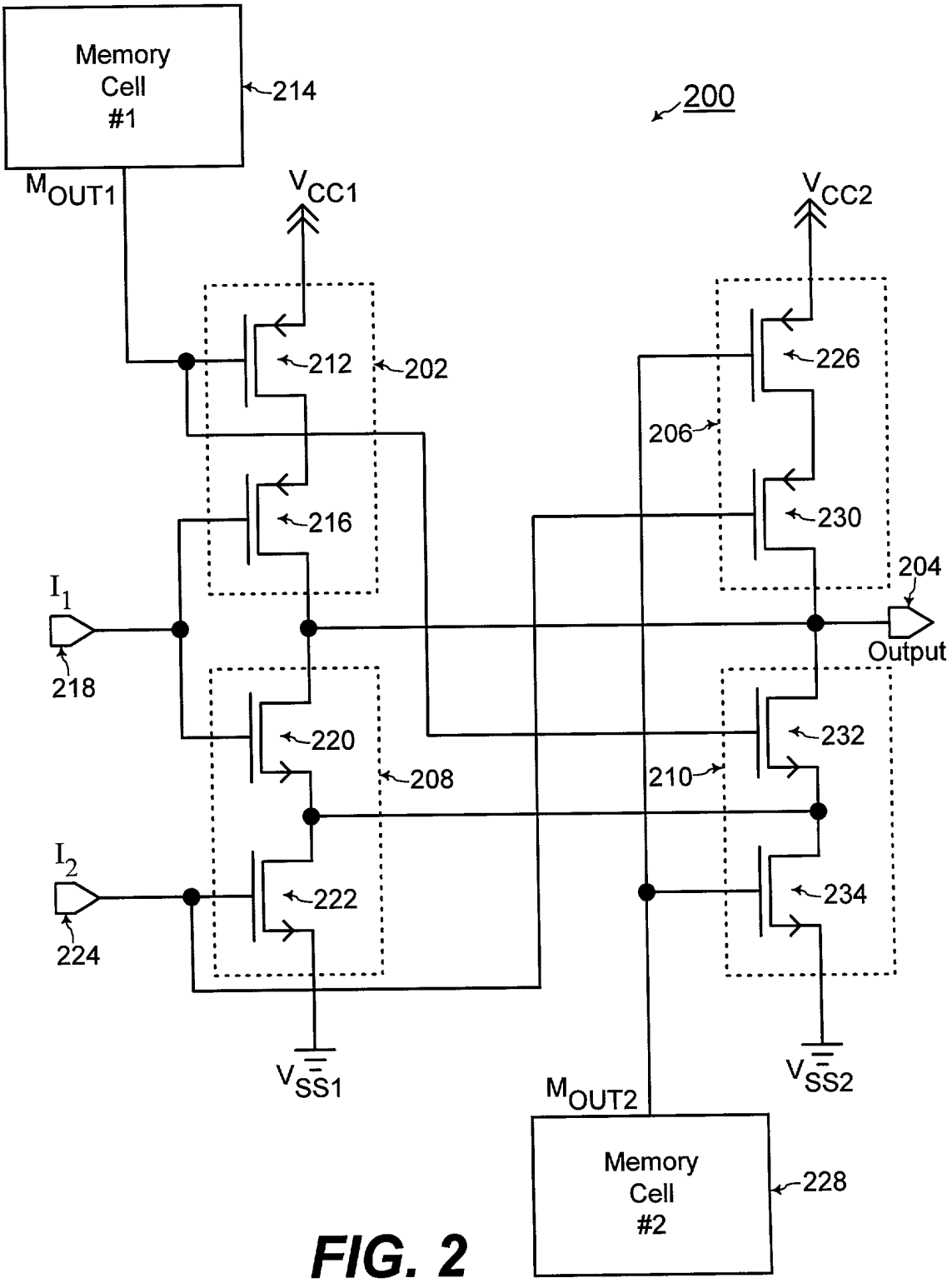
Memory Cell #1
214
200
M_{OUT1}
V_{CC1}
V_{CC2}
212
202
226
206
216
230
204
I_1
218
Output
220
208
232
210
I_2
222
234
224
V_{SS1}
V_{SS2}
M_{OUT2}
Memory Cell #2
228

FIG. 2

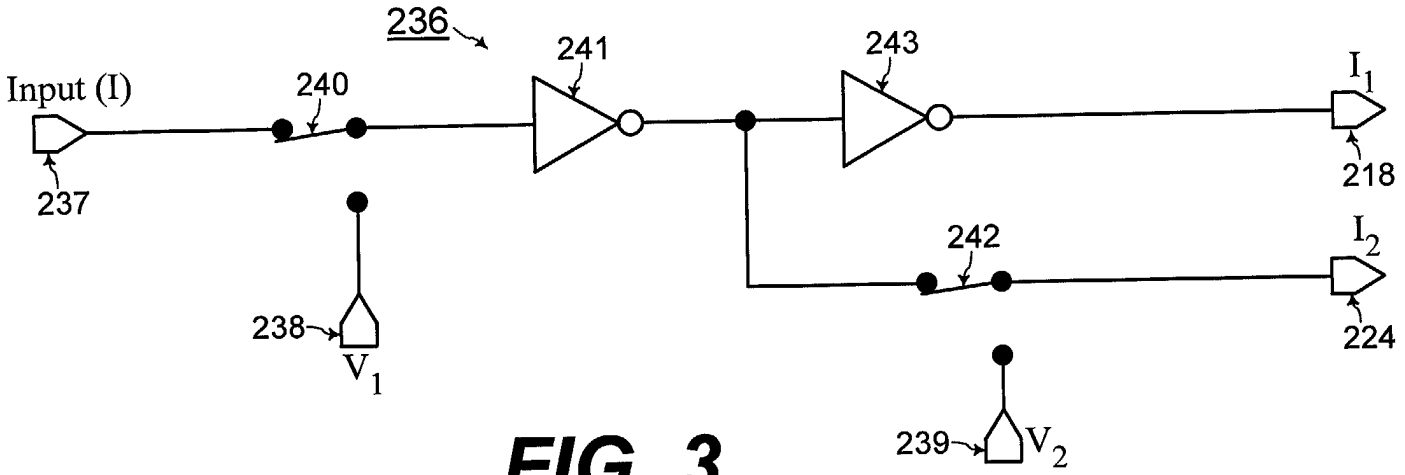
236
241
243
Input (I)
240
I_1
237
218
242
I_2
238
224
V_1
239
V_2

FIG. 3

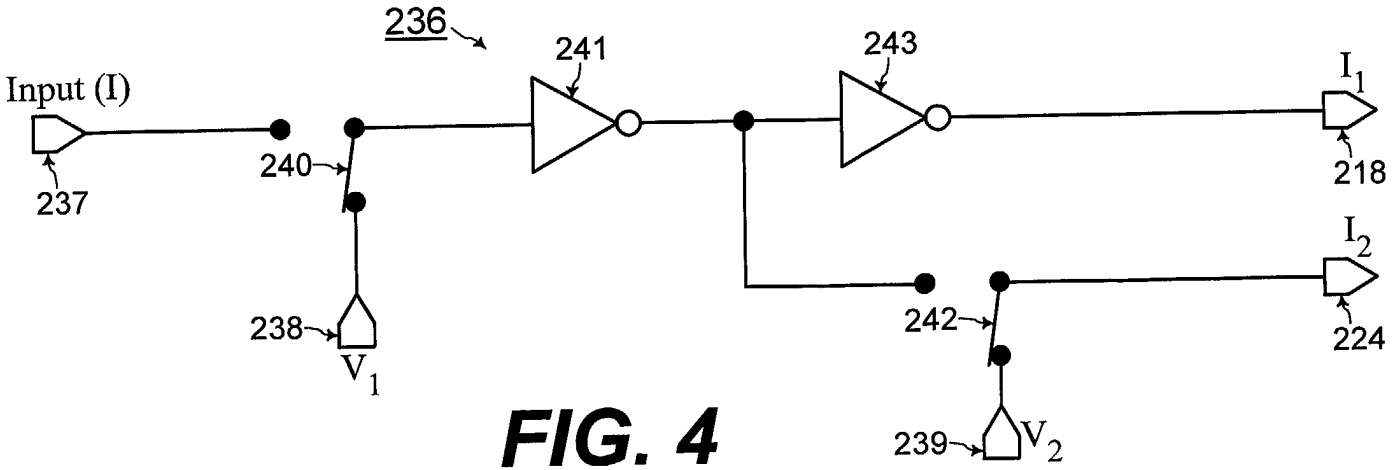
236
241
243
Input (I)
I_1
240
237
218
I_2
238
242
224
V_1
239
V_2

FIG. 4

I_1	I_2	M_{OUT1}	M_{OUT2}	Output
0	0	0	0	1
0	0	0	1	1
0	0	1	0	1
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	0
1	0	0	0	1
1	0	0	1	0
1	0	1	0	1
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

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FIG. 5

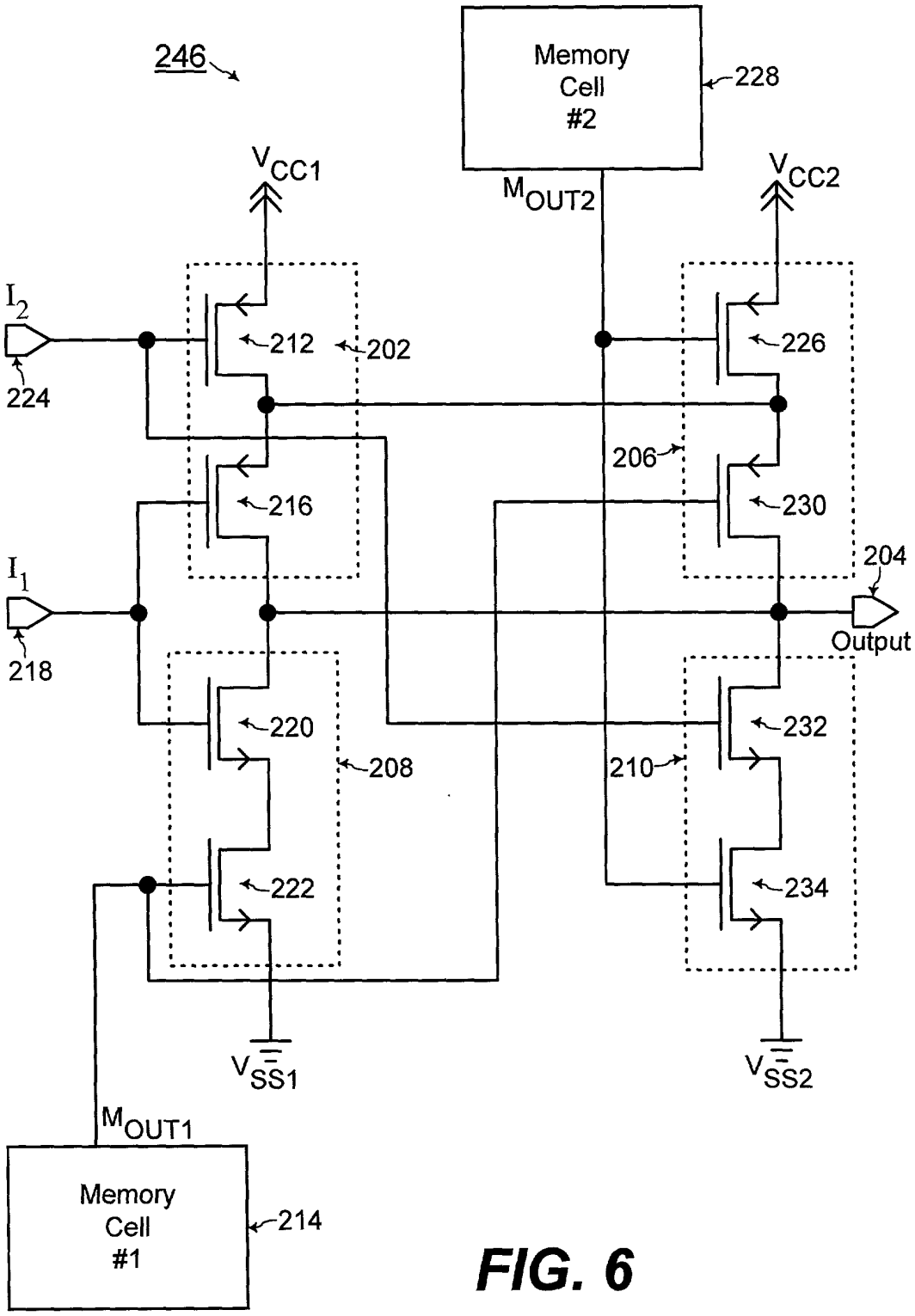
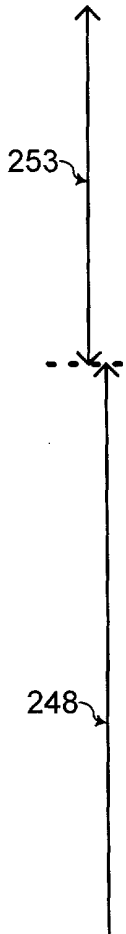

246
Memory Cell #2
228
V_{CC1}
V_{CC2}
M_{OUT2}
I_2
224
212
202
226
206
216
230
I_1
218
204
Output
220
208
232
210
222
234
V_{SS1}
V_{SS2}
M_{OUT1}
Memory Cell #1
214

FIG. 6



I_1	I_2	M_{OUT1}	M_{OUT2}	Output
0	0	0	0	1
0	0	0	1	1
0	0	1	0	1
0	0	1	1	1
0	1	0	0	1
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	0
1	0	1	1	0
1	1	0	0	1
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

FIG. 7

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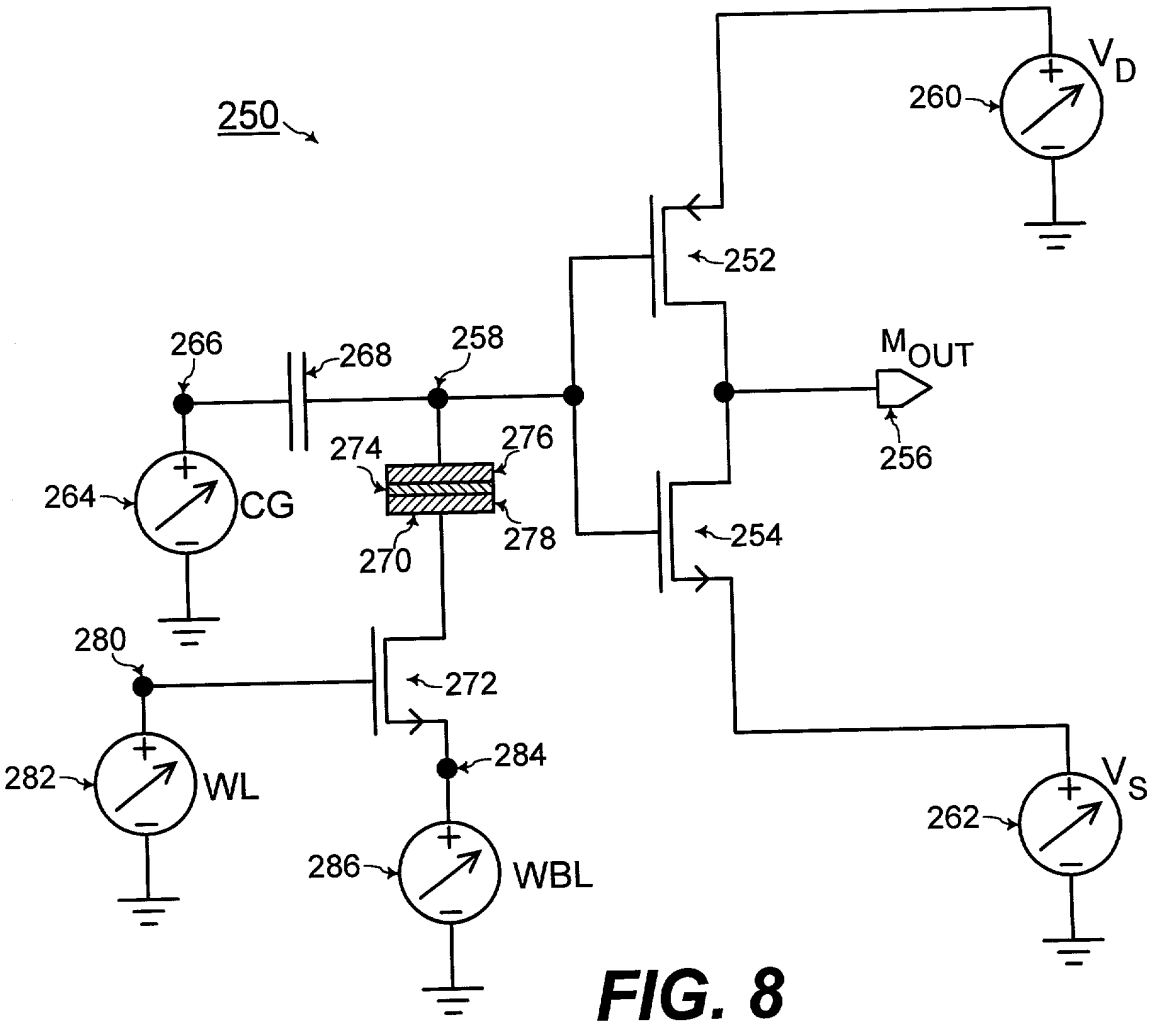

FIG. 8

Operation	CG	WL	WBL	V_D	V_S	M_{OUT}
Erase	V_{pp+}=12V	V_{dd}=1.8V	0V	V_{dd}=1.8V	V_{dd}=1.8V	V_{dd}=1.8V
Program	0V	V_{pp+}=12V	V_{pp}=11V	0V	0V	0V
Read	0.9V	V_{dd}=1.8V	0.9V	V_{dd}=1.8V	0V	V_{dd} or 0V

FIG. 9

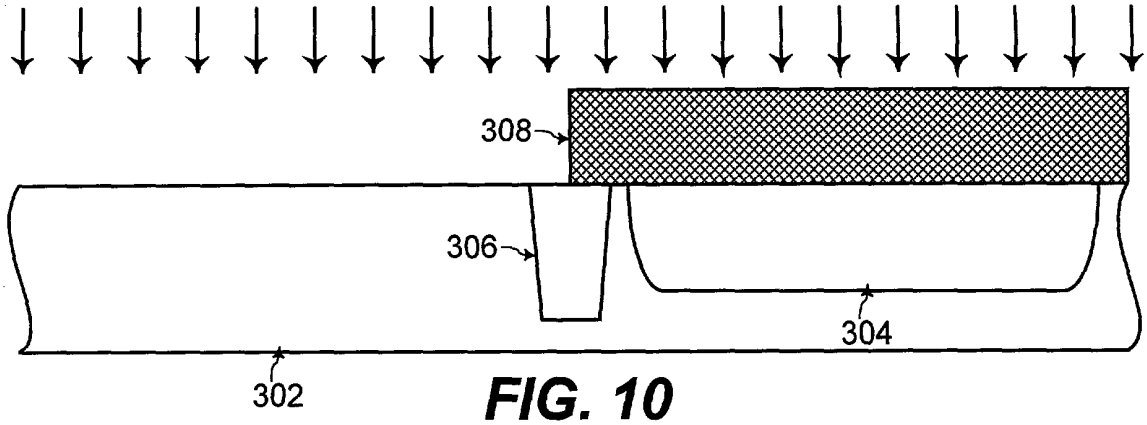

FIG. 10

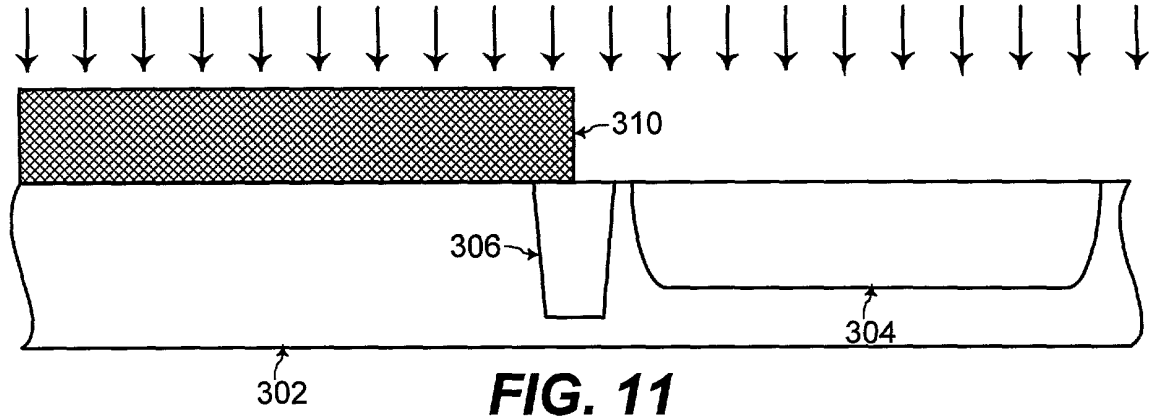

FIG. 11

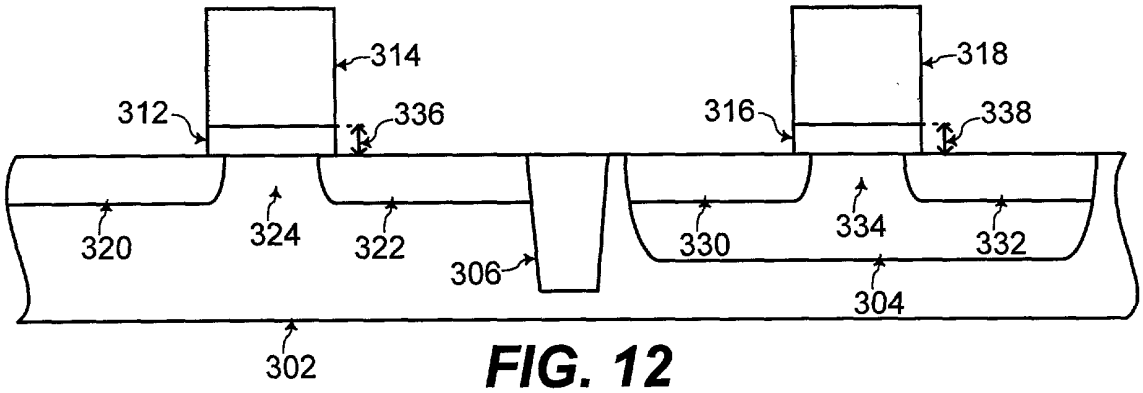

FIG. 12

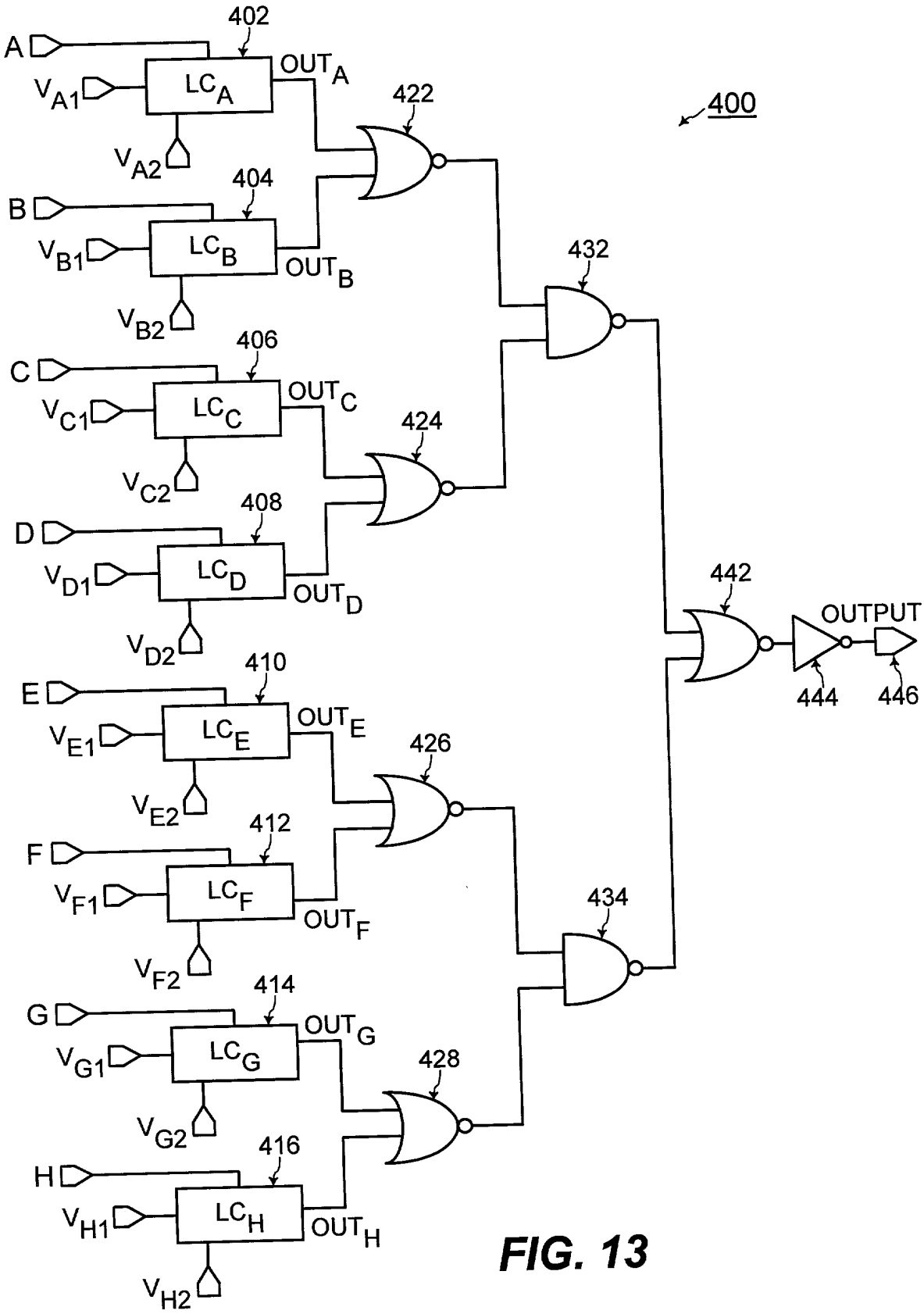
400
402
A
V_{A1}
LC_A
OUT_A
V_{A2}
404
B
V_{B1}
LC_B
OUT_B
V_{B2}
406
C
V_{C1}
LC_C
OUT_C
V_{C2}
408
D
V_{D1}
LC_D
OUT_D
V_{D2}
410
E
V_{E1}
LC_E
OUT_E
V_{E2}
412
F
V_{F1}
LC_F
OUT_F
V_{F2}
414
G
V_{G1}
LC_G
OUT_G
V_{G2}
416
H
V_{H1}
LC_H
OUT_H
V_{H2}
422
424
426
428
432
434
442
OUTPUT
444
446

FIG. 13

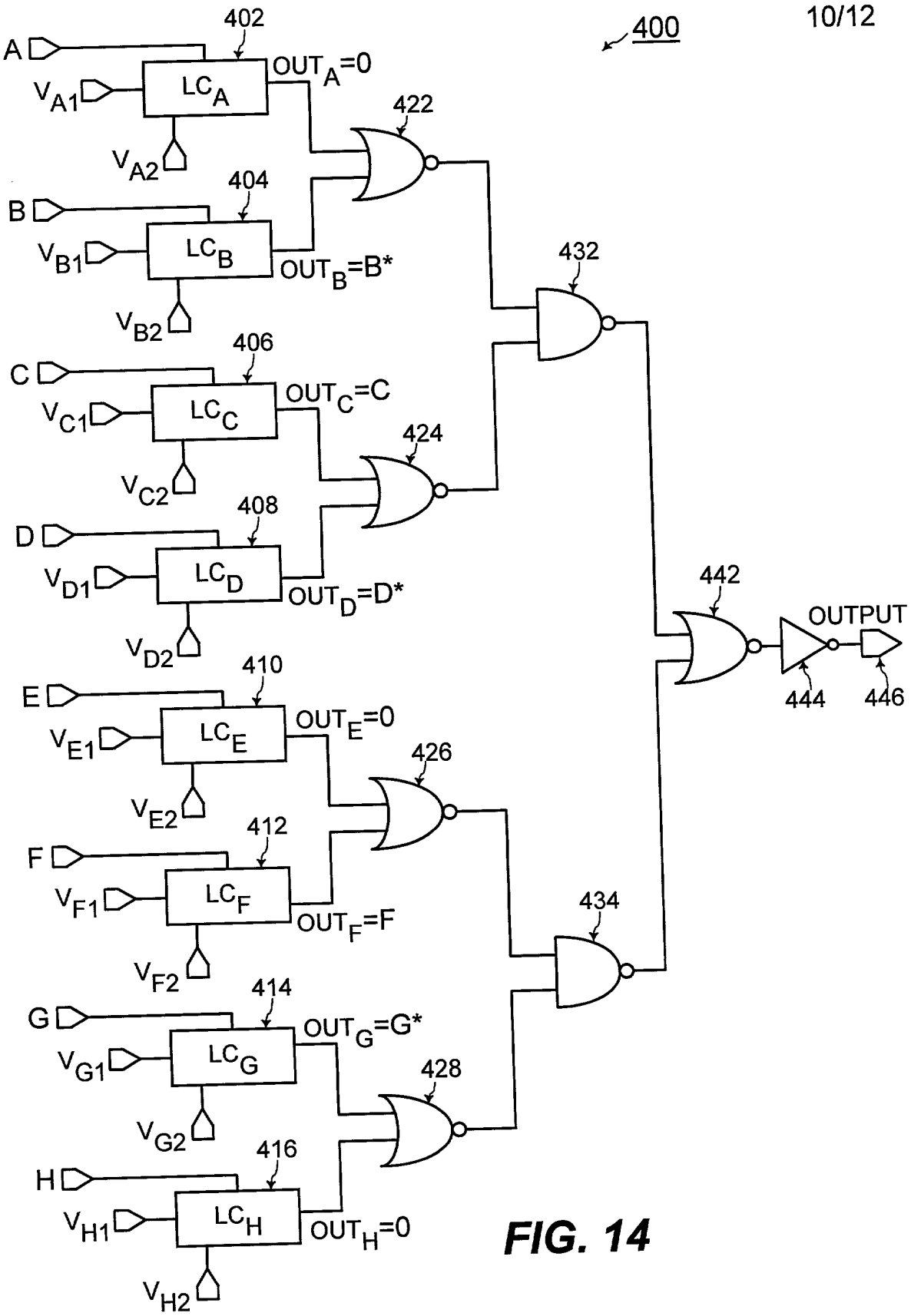
400
402
A
V_{A1}
LC_A
OUT_A=0
V_{A2}
422
404
B
V_{B1}
LC_B
OUT_B=B*
V_{B2}
432
406
C
V_{C1}
LC_C
OUT_C=C
V_{C2}
424
408
D
V_{D1}
LC_D
OUT_D=D*
V_{D2}
442
OUTPUT
444
446
410
E
V_{E1}
LC_E
OUT_E=0
V_{E2}
426
412
F
V_{F1}
LC_F
OUT_F=F
V_{F2}
434
414
G
V_{G1}
LC_G
OUT_G=G*
V_{G2}
428
416
H
V_{H1}
LC_H
OUT_H=0
V_{H2}

FIG. 14

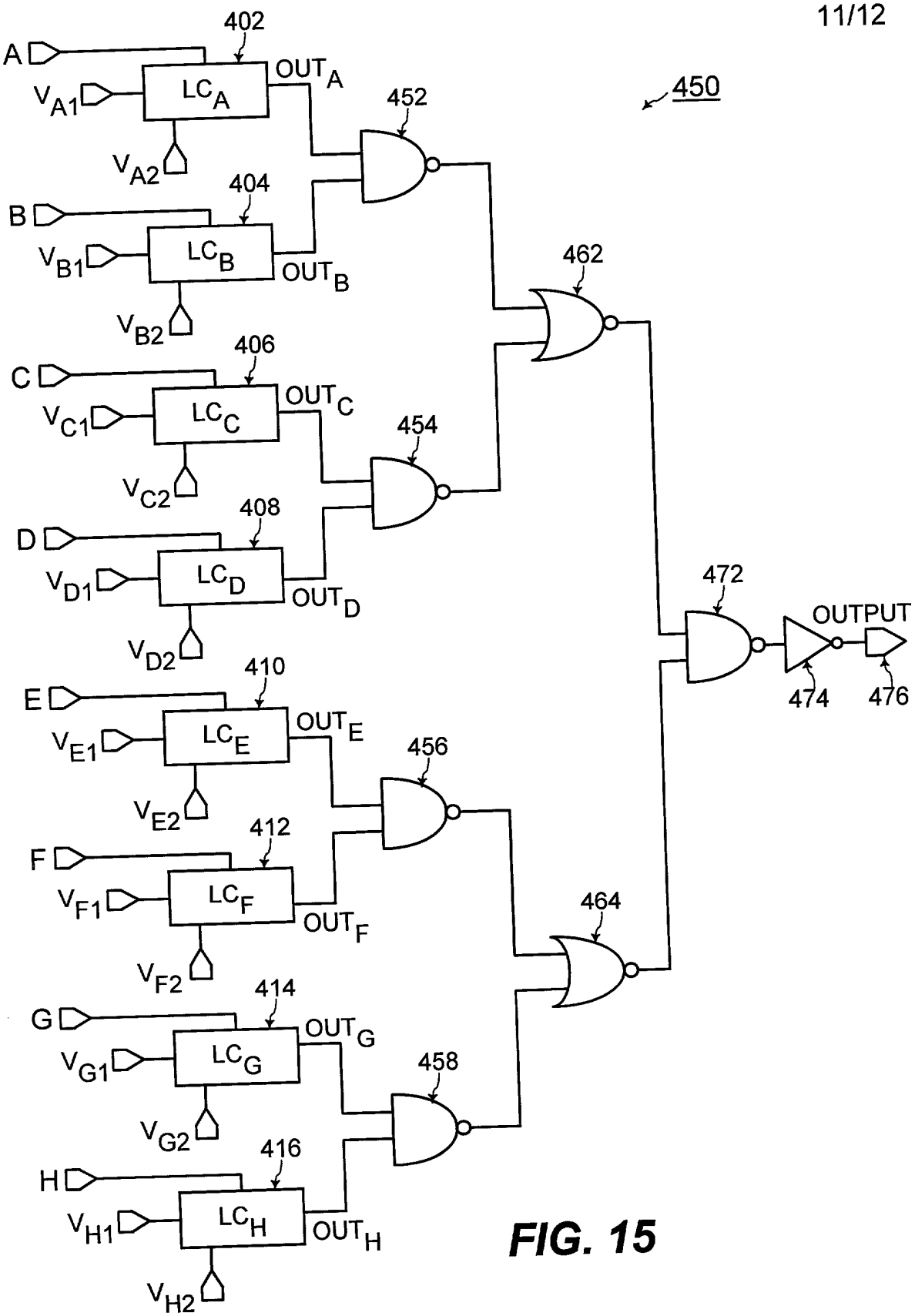
450
402
A
V_{A1}
LC_A
OUT_A
V_{A2}
452
404
B
V_{B1}
LC_B
OUT_B
V_{B2}
462
406
C
V_{C1}
LC_C
OUT_C
V_{C2}
454
408
D
V_{D1}
LC_D
OUT_D
V_{D2}
472
OUTPUT
474
476
410
E
V_{E1}
LC_E
OUT_E
V_{E2}
456
412
F
V_{F1}
LC_F
OUT_F
V_{F2}
464
414
G
V_{G1}
LC_G
OUT_G
V_{G2}
458
416
H
V_{H1}
LC_H
OUT_H
V_{H2}

FIG. 15

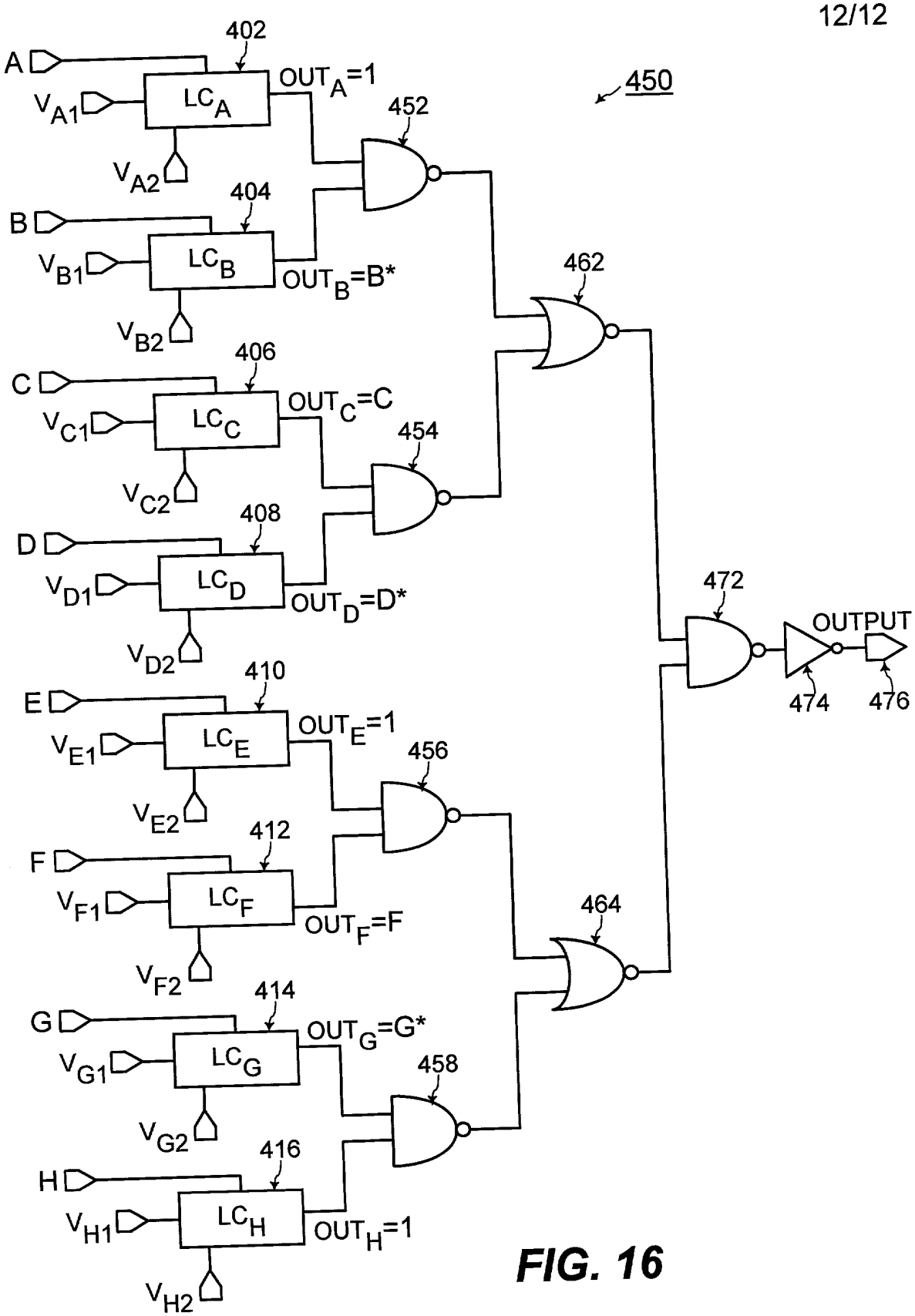
450
402
A
V_{A1}
LC_A
OUT_A=1
V_{A2}
452
404
B
V_{B1}
LC_B
OUT_B=B*
V_{B2}
462
406
C
V_{C1}
LC_C
OUT_C=C
V_{C2}
454
408
D
V_{D1}
LC_D
OUT_D=D*
V_{D2}
472
OUTPUT
474
476
410
E
V_{E1}
LC_E
OUT_E=1
V_{E2}
456
412
F
V_{F1}
LC_F
OUT_F=F
V_{F2}
464
414
G
V_{G1}
LC_G
OUT_G=G*
V_{G2}
458
416
H
V_{H1}
LC_H
OUT_H=1
V_{H2}

FIG. 16